Met Office

NEWS

Consensus needed on Paris Agreement 1.5 °C guard rail

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Writing in the journal Nature ahead of COP28 a team of Met Office scientists has emphasised, surprisingly, there is currently no formally agreed way of defining the current level of global warming relevant to the Paris Agreement.

They have proposed a solution.

While the global average temperature in a particular year is well-known, this will not be suitable as an indicator of whether the "Paris 1.5" has been breached or not, because the Paris Agreement refers to long-term warming, not individual years. But no alternative has yet been formally agreed.

Without an agreement on what actually will count as breaching the Paris 1.5, there may be confusion and delay in responding.

Professor Richard Betts of the Met Office and the University of Exeter is the paper's lead author. He said: "Clarity on breaching the Paris Agreement guard rails will be crucial. Without an agreement on what actually will count as exceeding 1.5 °C, we risk distraction and confusion at precisely the time when action to avoid the worst effects of climate change becomes even more urgent."

New indicators for Global Warming levels

Some of the current suggested metrics rely on long-term averages – usually over two decades - of annual global annual temperature. Richard Betts added: "Using the average global temperature over the last 20 years would mean we would have to wait ten years to confirm whether the 1.5 °C ceiling has been reached: creating a decade of otherwise preventable delay.

"Today we are recommending an indicator combining the last ten years of global temperature observations with an estimate of the projection or forecast for the next ten years. If adopted this could mean a universally-agreed measure of global warming that could trigger immediate action to avoid further rises."

Using this suggested approach, the researchers found that the figure for the current global warming level is around 1.26 °C, with an uncertainty range of 1.13 °C to 1.43 °C.

It is more likely than not one of the next five years will reach or even exceed 1.5 °C above pre-industrial levels. But even an anomalously warm year would not mean that we have reached the first of the Paris Agreement guard rails. The Earth's climate system has a range of natural variability where the annual temperature fluctuates within small margins. Richard

Betts added: “Using an indicator of several years of observations and projections will smooth out the natural variation to reveal the underlying human-induced warming.”

2023 Global temperature

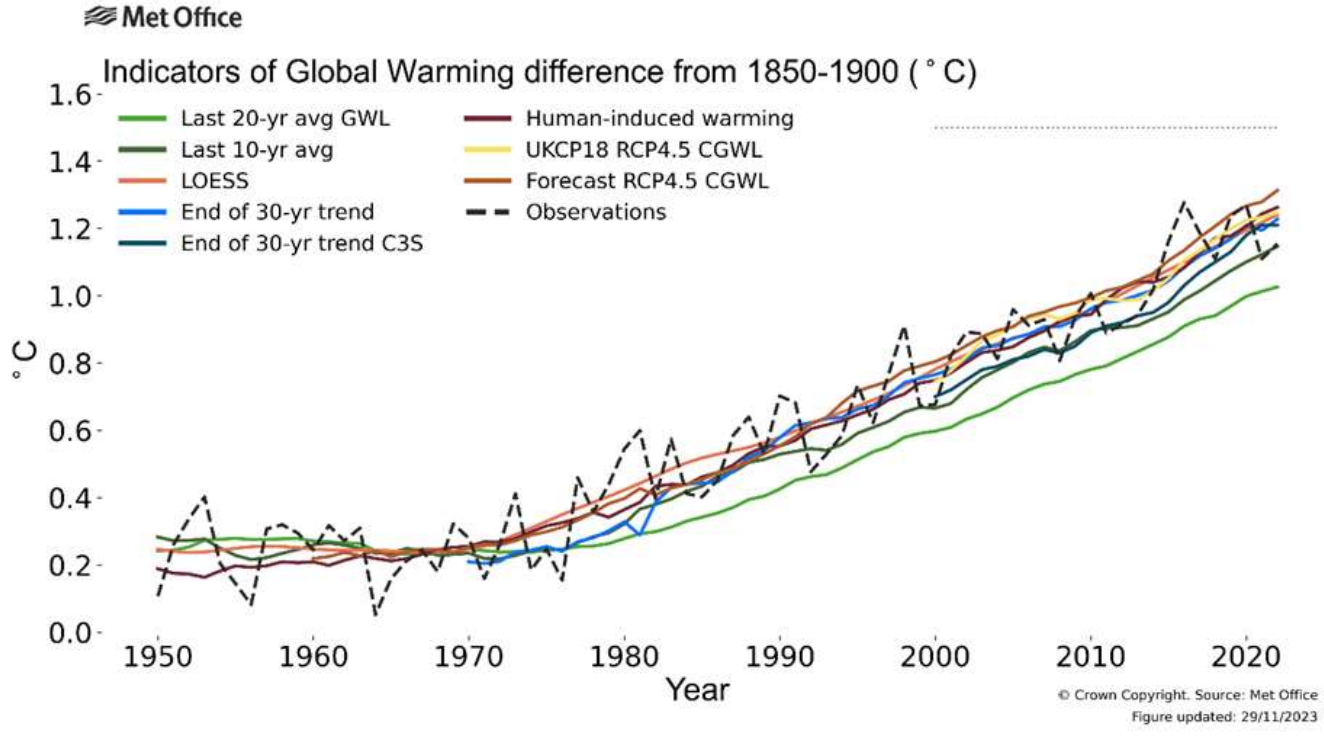
Provisional estimates of the global average surface temperature for 2023 suggest the year could be on track to be the warmest on record. The year is likely to exceed the level reached in 2016; currently the warmest year on record.

2023 is expected to continue the run of the warmest years on record since 1850. Beginning in 2015, the series includes years at both ends of natural climate variability. Some years like 2016 and 2023 will have been naturally warmer because of the influence of El Niño - where a natural warming of parts of the tropical Pacific warms the planet temporarily by a small margin. But the series also includes years which should have been naturally marginally cooler.

Richard Betts concluded: “The fact that the warmest years on record include both the highs and lows of natural climate variability is yet more evidence that climate change driven by human-induced greenhouse gas emissions dominates the recent climate record.”

Global Warming dashboard

To complement the newly proposed indicators, a new section has been added to the Met Office Climate Dashboard to illustrate the current level of global warming. The ‘Indicators of Global Warming’ dashboard displays eight separate indicators as well as observed global mean temperature using Met Office HadCRUT5 data.



The page also displays an indicator of current Global Surface Warming across all eight methodologies as well as a table explaining each indicator with a central estimate figure and uncertainty boundaries.

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